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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/823,448	03/30/2001	Frederick S. Parker	4589P010	5703

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EXAMINER

MOYER, MICHAEL J

ART UNIT	PAPER NUMBER
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2675

DATE MAILED: 06/21/2002

9

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/823,448

Applicant(s)

PARKER, FREDERICK S.

Examiner

Michael J. Moyer

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-43 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-43 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                      | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). ____.  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                             | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>4,6,8</u> . | 6) <input type="checkbox"/> Other:  |

## **DETAILED ACTION**

### ***Drawings***

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: page 7, lines 17-19 with regards to reference numbers 50 and 52 within Fig. 2; page 9, lines 1 with regards to reference number 78 within Fig.3; page 12, lines 10-11 with regards to reference numbers 86r, 86g, and 86b within Fig. 7. A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

### ***Specification***

2. The disclosure is objected to because of the following informalities: page 3, lines 13-18 contains the remark regarding copendency, but does contain the correct Serial Number or Patent Number to which the copendency refers to. Appropriate correction is required.

The disclosure is objected to because of the following informalities: the page numbers are not in sequential order. The first two pages are both numbered with 2.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claim 1-2, 4-5, 19-20, 23-24, and 26-28** are rejected under 35 U.S.C. 103(a) as being unpatentable over Kanayama, U.S Patent No. 4,897,639 and further in view of Reymond, U.S Patent No. 5,936,599.

**As pertaining to claim 1 and 19**, which are the apparatus of the invention and **claim 23**, which are the method of the invention, Kanayama discloses circuit, means, images and data comprising two sets of LEDs 3 and 4, that generate light each having a different wavelength from each other (col. 2, lines 54-68 and Fig. 1). Kanayama further discloses a display controller in which it functions as described herein: the display controller comprises a frame memory 11, pulse width modulating (PWM) circuit 12, compensating circuit 13 and a drive circuit 14. The frame memory 11 receives an addressing signal ADR (j,i) and stores contrast data LPD (j,i) for each of the pixels in one image frame, the PWM circuit 12, generates a rectangular signal having a duration of time proportional to the value of contrast data LPD (j,i), the compensating circuit 13 compensates for the duration of time of a signal from the PWM circuit 12 on the basis of compensation data and drive circuit 14 drives the LEDs with a constant amount of electric current (col. 3, lines 33-68 and Fig. 2).

**As pertaining to claim 1 and 19**, Kanayama does not disclose a switch that would be connected in series to each set of LEDs. Even though Kanayama does not expressly disclose a power source within the control display circuit, one is assumed to operated the control circuit.

**As pertaining to claim 1 and 19**, Reymond discloses a circuit that comprises in one embodiment an AC power source 34 and switch 36 that is connected in series with an LED array 31 and in a second embodiment, same thing as described in the first embodiment, but with capacitor C in parallel with the array LED array, in this combination further comprising an inductor with the help the capacitor C provides an high impedance current source (col. 4, lines

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51-55; col. 6, lines 1-32 and Figs. 4-5). It is also known that the switch may be of several different types, whether it is switching circuit or any type of transistor, i.e. MOSFET, BJT etc.

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine, **as pertaining to claim 1 and 19**, a switch to each of the LED arrays of Reymond with Kanayama.

The suggestion/motivation for doing so would have been to provide a LED circuit that is able to operate with a common power source but with the help of a switch the controlling circuit would function at more efficient rate. When the switch is closed it would allow the circuit to function properly but when open it would allow the LEDs to rest in a sense or to allow the circuit not to consume power thus saving power. Also the switch would help if there was a problem with that particular LED array because it would stay open, hopefully, thus allowing the circuit to operate the other LED array without using or consuming power to operate the nonfunctioning LED array.

Therefore, it would have been obvious to combine Reymond with Kanayama to obtain the invention as specified in claim 1 and 19.

**As pertaining to claim 2 and 20**, which are the apparatus of the invention, and **claim 24**, which are the method of the invention, Kanayama discloses circuit, means, images and data for a third set of LEDs that generates a light having a different wavelength from the previous two sets of LEDs (col. 2, lines 50-68 and Fig. 1) and a control circuit. Again, Kanayama does not disclose a switch connected in series but Reymond does disclose a switch. See claims 1, 19 and 23 for rejection. Claims 2, 20 and 24 are dependent on claims 1, 19, and 23, respectively and are rejected on the same basis and what is stated above.

**As pertaining to claims 4 and 26**, Kanayama discloses that the LEDs emit yellow, cyan and magenta (col. 2, lines 50-68). Claims 4 and 26 are dependent on claims 1-2 and 23 and are rejected on the same basis and what is stated above.

**As pertaining to claim 5** (apparatus), Kanayama and Reymond disclose that the LEDs are light emitting diodes (Kanayama: col. 1, lines 5-11 and abstract; Reymond: col. 1, lines 10-15). Claim 5 is dependent on claims 1 and 2 and is rejected on the same basis and what is stated above.

**As pertaining to claim 27** (method), Kanayama does not disclose a power source, it is assumed that one exists to operate the controller. However, Reymond does disclose an AC power source (see claim 1 (apparatus), 19, and 23 with regards to Reymond for rejection). Claim 27 is dependent on claim 23 and is rejected on the same basis and what is stated above.

**As pertaining to claim 28** (method), Reymond disclose switches that are coupled to the LEDs sets (see claim 1 (apparatus), 19, and 23 for rejection with regards to Reymond). Claim 28 is dependent on claim 23 and is rejected on the same basis and what is stated above.

4. **Claims 3** (apparatus) and **25** (method) are rejected under 35 U.S.C. 103(a) as being unpatentable over Hunter, U.S Patent No. 5,724,062 as applied to claim 1 or 2 or 23 above, and further in view of both Kanayama and Reymond (3) or Kanayama (25).

**As pertaining to claim 3**, Kanayama and Reymond disclose what is previously stated in claim 1 and 2. **As pertaining to claim 25**, Kanayama discloses what is previously stated in claim 23.

**As pertaining to claim 3 and 25**, they do not disclose that the LED sets emit red, green and blue light.

**As pertaining to claim 3, and 25**, Hunter discloses an array of LEDs comprising of a set of red 32, green 33 and blue 34 (col. 4, lines 26-29 and Figs. 1-4).

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At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the red, blue and green LEDs of Hunter with Kanayama and Reymond (3) or Kanayama (25).

The suggestion/motivation for doing so would have been to provide a display that is able to generate images or pictures which uses the primary colors. The primary colors are red, green and blue and they form the foundation or the building blocks of all colors in which we use and see. With these primary colors, the display is able to produce for example, cyan by emitting blue and green together or magenta by emitting red and blue.

Therefore, it would have been obvious to combine Hunter with Kanayama and Reymond to obtain the invention as specified in claims 3 and 25. Claims 3 and 25 are dependent on claims 1-2 and 23, respectively and are rejected on the same basis as those claims and what is stated above.

5. **Claim 6** (apparatus) is rejected under 35 U.S.C. 103(a) as being unpatentable over Fischer, DE 4234293 A1 as applied to claims 1 or 2 above, and further in view of Kanayama and Reymond.

**As pertaining to claim 6**, Kanayama and Reymond disclose as what is previously stated in claims 1 and 2.

**As pertaining to claim 6**, they do not disclose that the LEDs are laser emitting diodes.

**As pertaining to claim 6**, Fischer discloses a flat matrix color TV that uses laser diodes as the light source.

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the laser diodes of Fischer with Kanayama and Reymond.

The suggestion/motivation for doing so would have been to provide a display that uses laser diodes instead of light emitting diodes. There might be some minute advantages between

laser diodes and light emitting diodes but not much. Light emitting diodes produce wider spectrum of light, whereas laser diodes produce a much smaller spectrum of light. They almost use the same amount of power but light emitting diodes stay "on" for a longer period of time compared to laser diodes but it so fast the human eye can not distinguish this in a display.

Therefore, it would have been obvious to combine Fischer with Kanayama and Reymond to obtain the invention as specified in claim 6 and 30. Claim 6 is dependent on claims 1 and 2 and is rejected on the same basis as those claims and what is stated above.

6. **Claim 7-9 (apparatus) and 31-32 (method)** are rejected under 35 U.S.C. 103(a) as being unpatentable over Pross et al., U.S Patent No. 6,396,466 as applied to claim 1 or 2 or 23 or 27 or 28 above, and further in view of Kanayama and Reymond.

**As pertaining to claims 7 and 32**, Kanayama and Reymond disclose what is previously stated in claims 1 and 2.

**As pertaining to claims 7 and 31-32**, they do not disclose that the controller used to drive the display will generate a compensating or different signal to operate a switch or power supply in case LED set fails.

**As pertaining to claims 7 and 31-32**, Pross et al. discloses a control circuit, which encompasses a logic circuit that generates a signal, that is connected to a switch and power source, in the event that entire display fails or if part of display can still function. The signal generated indicates a replacement is needed or compensation is possible (col. 3, lines 8-14; col. 4, lines 1-6).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the logic circuit of Pross et al. with Kanayama and Reymond.

The suggestion/motivation for doing so would have been to provide a display that can still function if an LED or LED set fails. In the event that a LED failed, then the switch would be



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able to stay open or closed, depending on the arrangement of the LEDs to allow the display to function. Thus the consumer would still have a functioning display, without having to worry to replace it.

Therefore, it would have been obvious to combine Pross et al. with Kanayama and Reymond to obtain the invention as specified in claim 7 and 31-32. Claims 7 and 31-32 are dependent on claims 1-2 and 23 and 27-28 and are rejected on the same basis and what is stated above.

**As pertaining to claim 8**, Pross et al. discloses that the current sources used are controllable thus called controllable current sources, the desired brightness can be set by the setting the current (col. 2, lines 54-55).

**As pertaining to claim 9**, Pross et al. discloses the LEDs used the display can be series-parallel (col. 1, lines 3-5).

7. **Claims 10-12, 14-18, 21-22, 29-30, 34-35, 37-42** are rejected under 35 U.S.C. 103(a) as being unpatentable over Kanayama and further in view of Pross et al.

**As pertaining to claim 10, 21 and 34**, Kanayama discloses as what is claimed in claim 1.

**As pertaining to claim 10, 21 and 34** Kanayama does not disclose that a power source provides a first and second current source the first and second set of LEDs. Again, even though Kanayama does not expressly disclose a power source, it is assumed that one exists to operate the control display circuit.

**As pertaining to claim 10, 21 and 34**, Pross et al. discloses a control circuit, includes a power source and multiple controllable current sources that are connected to each set of LEDs (col. 2, lines 50-55 and Fig. 4).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the control circuit of Pross et al. with Kanayama.

The suggestion/motivation for doing so would have been to provide a control circuit that has multiple controllable current sources to allow each set of LEDs to function individually. This allows, per se, if one set of LEDs were to fail then the control circuit would allow the other sets to still function or operate because they would have their own current source. This helps in a sense, if they all shared a current source and one set of LEDs failed then they would all fail because no switches would be incorporated to allow the other set of LEDs to function or receive the shared current.

Therefore, it would have been obvious to combine Pross et al. with Kanayama to obtain the invention as specified in claim 10, 21 and 34.

**As pertaining to claim 11, 22 and 35**, Kanayama discloses a third set of LEDs that has a different wavelength from the first and second set of LEDs and a control circuit (col. 2, lines 50-68 and Fig. 1). Pross et al. discloses a control circuit with multiple controllable current sources that are connected to a set of LEDs (see claim 10 and 22 for rejection). Claims 11, 22 and 35 are dependent on claims 10, 21 and 34, respectively and are rejected on the same basis and what is stated above.

**As pertaining to claims 12, 17 and 39**, by incorporating Kanayama's display controller and Pross et al. control circuit, with controllable current sources, the desired brightness can be set by the setting the current (col. 2, lines 54-55). Therefore with regards to **claim 17**, the LEDs brightness would correspond to the current produce by the controllable current source. Claims 12, 17 and 39 are dependent on claims 10-11, 34-35 and 38, respectively and are rejected on the same basis and what is stated above.

**As pertaining to claims 14 and 37**, see claim 4 for rejection. Claims 14 and 37 are dependent on claims 10-11 and 34-35 and are rejected on the same basis and what is stated above.

**As pertaining to claim 15**, see claim 5 with regards to Kanayama for rejection. Claim 15 is dependent on claim 10 and 11 and is rejected on the same basis and what is stated above.

**As pertaining to claim 18**, see claim 9 for rejection. Claim 18 is dependent on claim 10 and 11 and is rejected on the same basis and what is stated above.

**As pertaining to claim 29 and 40**, see claim 5 and 9 for rejection. Claim 29 and 40 are dependent on claims 23 and 34-35, respectively and are rejected on the same basis and what is stated above.

**As pertaining to claim 38** (method of claims 34-35 and related to apparatus of claims 10-11), see claims 10 and 11, with regards to Pross et al. for rejection. Claim 38 is dependent on claims 34-35 and is rejected on the same basis and what is stated above.

**As pertaining to claim 42**, see claim 7 and 9 for rejection. Claim 42 is dependent on claims 34-35 and 38 and is rejected on the same basis and what is stated above.

8. **Claim 13, 33, 36 and 43** are rejected under 35 U.S.C. 103(a) as being unpatentable over Hunter, U.S Patent No. 5,724,062 as applied to claim 10 or 11 or 23 or 34 or 35 above, and further in view of Kanayama and Pross et al.

**As pertaining to claims 13 and 36**, see claim 3 for rejection. **As pertaining to claims 33 and 43**, Kanayama and Pross et al. do not disclose the LEDs can be used in a liquid crystal display or LCD, however Hunter does disclose that the LEDs can be used in a LCD (col. 3, lines 8-13). Claims 13, 33 and 43 are dependent on claims 10-11 and 23 and 34-34, respectively and are rejected on the same basis and what is stated above.

9. **Claim 16, 30 and 41** are rejected under 35 U.S.C. 103(a) as being unpatentable over Fischer, DE 4234293 A1 as applied to claims 10 or 11 or 23 or 34 or 35 above, and further in view of Kanayama and Pross et al.

**As pertaining to claim 16**, see claim 6 for rejection. **As pertaining to claims 30 and 41**, see claims 6 and 9 for rejection. Claim 16, 30 and 41 are dependent on claim 10-11 and 23 and 34-35, respectively are rejected on the same basis and what is stated above.

### ***Conclusion***

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- a) Simon et al., U.S Patent No. 4,887,074. Simon et al. teaches a light emitting diode display system.
- b) Smith et al., U.S Patent No. 5,278,542. Smith et al. teaches a multicolor display system.
- c) Wei et al., U.S Patent No. 5,684,368. Wei et al. teaches a smart driver for an array of LEDs.
- d) Havel, U.S Patent No. 6,219,014 B1. Havel teaches a variable color display device having display area and background area.
- e) Kuriwaki et al., U.S Patent No. 6,097,367. Kuriwaki et al. teaches a display device which incorporates LEDs.
- f) Chang, U.S Patent No. 6,249,088 B1. Chang teaches a three-dimensional lattice structure based LED array for illumination.
- g) Kaelin et al., U.S Patent No. 3,740,570. Kaelin et al. teaches driving circuits for light emitting diodes.
- h) Okuno, U.S Patent No. 4,298,869. Okuno teaches a light emitting diode display.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Michael J. Moyer** whose telephone number is **(703) 305-2099**. The examiner can normally be reached Monday-Friday, 8:30am-5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Steven Saras**, can be reached at **(703) 305-9720**.

**Any response to this action should be mailed to:**

Commissioner of Patents and Trademarks  
Washington, D.C. 20231

**or faxed to:**


**(703) 872-9314 (for Technology Center 2600 only)**

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the **Technology Center 2600 Customer Service Office** whose telephone number is **(703) 306-0377**.

Michael J. Moyer  
Examiner  
Art Unit 2675

MJM  
June 16, 2002

  
**STEVEN SARAS**  
**SUPERVISORY PATENT EXAMINER**  
**TECHNOLOGY CENTER 2600**